Release Notes
LaGriT version of Spring 1999

A summary of the major changes found in this release are listed below. A complete list of changes is included at the end of this document. Refer to the user's manual for a complete description of the new, enhanced and revised commands.

New Commands:

triangulate — triangulate a 2D mesh assuming the ordered nodes in the 2D mesh define the perimeter of a polygon.

ung2avs — convert ArcInfo (GIS) Ungenerate files to AVS
ung2avs/avs_file_out/ung_file_in/[z_value]

define — allows a number to be associated with a character string, such that the character string can be used in input decks in place of the number.
define/nx/3
define/ny/4
define/nz/5
define/bottom/0.1/
define/top/4.6
define/left/-4.7
define/right/9.8
surface/s1/reflect/box/0.0,left,bottom/1.0,right,top
rz/xyz/nx,ny,nz/0.0,left,bottom/1.0,right,top/1,1,1

colormap — This command builds the colormap. In reality it only builds the material adjacency graph, from which the colormap can be quickly generated when needed. Three actions are possible:
colormap/[**add**|**create**|**delete**]/[cmo_name]
add -- The material adjacency characteristics of the specified mesh object is added to the existing material adjacency graph, which is created if it didn't exist. This is the default action.
create -- The existing material adjacency graph is deleted and a new one created from the specified mesh object.
delete -- The material adjacency graph is deleted if it exists. Any specified mesh object is ignored.
Examples:
colormap/**create**/mesh1
colormap//mesh2
colormap/**delete**

Enhanced Commands:

massage

added a smoothing operation to the optimization which can be turned off with the **nosmooth** option
massage/creation/annihilation/toldamage/**/**[ifirst,ilast,istride]/
[nosmooth]

smooth

new option **aspect** will smooth to improve aspect ratio by moving a node toward the neighbor that provides the greatest improvement.
New option **lpfilter** will smooth surface networks (i.e 2D mesh objects or the interface network of a 3D mesh) using a polynomial filter. (filtdeg default 30; k_pb default 0.1)
smooth/position/aspect/[ifirst,ilast,istride/toldamage]
smooth/position/lpfilter/[ifirst,ilast,istride/filtdeg/k_pb]

pset

new option **surface** will identify nodes on the specified surface. Keyword surface names have the following meaning:
-all- will identify nodes on any surface.
-interface- will identify nodes on any interface surface.
-boundary- will identify nodes on exterior surfaces.
pset/psetname/**surface/**surface_name/[ifirst,ilast,istride]

refine

new option **roughness** will refine based on the distance of the endpoint of an edge to the plane determined by the synthetic normal with respect to a specified surface at the other endpoint of the edge
refine/roughness///edge/ifirst,ilast,istride**/**
distance**/**surface_name**/exclusive|inclusive**
refine/roughness///edge/1,0,0/.28/ptop/inclusive

new option **edge_list** will bisect a set of edges specified by the node numbers of the endpoints of the edges.
refine/edge_list///edge/edge_list**/**
refine/edge_list///edge/1 2 23 47/ will refine the edge with endpoints 1 and 2 also the edge with endpoints 23 and 47.

new option **interface** will bisect a set of non-interface edges of tets all of whose vertices are interface nodes.
refine/interface///edge/pset,get,psetname////
[**inclusive|exclusive]/**

extract

new option **network** will extract the network of interfaces (consisting of parent nodes) from a mesh.
extract/network/ifirst,ilast,istride/cmoout/cmoin

dump

dump/recolor/file_name
This command writes the existing **colormap** to the specified file.

(See **colormap** command.)

dump/fehm/file_name / [cmo_name] / **[binary**| **ascii** | **asciic** | **binaryc] / /[scalar, vector, both] / [delatt, keepatt]**
The [**delatt**, **keepatt**] option gives the user the ability to delete or keep the boundary attributes, top, bottom, left_w, right_e, back_n, front_s, which are created by **dump/fehm**. The default is **delatt**.
dump/fehm/file_name / [cmo_name] / **[binaryc** | **asciic]** produces compressed matrices

dump/gmv/file_name/[cmo_name]/**[binary, ascii]** specify binary or ascii format of GMV file on command line

dump/lagrit/file_name/[cmo_name]/ will write an ascii restart file that contains geometry and mesh object information. cmo_name can be '**-all-**' in which case all mesh objects are written to the file or it can specify a list of mesh objects to be written.

read **read/lagrit**/file_name/[cmo_name]/ will read an ascii restart file written by **dump/lagrit.**

connect **connect** will triangulate a 2d planar set of nodes generating a triangular Delaunay grid.

Bugs:

11/16/98	multi_material	fixed error – node added that was on both an interface and an exterior boundary might get the wrong itp1 value.
12/04/98	connect	refresh pointers after call to remove_bigtet
12/22/98	cel_chain	fix bug with memory allocation for mpary array.
01/20/99	massage,getmpary	correctly access pset for massage
01/22/99	try2to2b	get pointer to icontab correctly
01/27/99	cel_chain	check for psetnames = blank
01/29/99	getbit,setbit	change declaration of ISHFT to intrinsic
02/01/99	flip2to3,flp2to3b, flp2to3i	update itettyp for new element
02/02/99	recon2d	use cmo.h (icmoget) to pass to testdamage so it knows if it must refresh pointers
02/02/99	dumpavs	close file always before leaving subroutine
02/22/99	refine_edge_list_lg	correct pointer statement
02/23/99	tangent_plane, cer_chain	fix refine on roughness
03/04/99	refine_fix_add	correctly set icr values for added nodes on constrained interfaces
03/04/99	sheet	explicitly specify –def- for mesh object name
03/01/99	rzbrickg	fix ratio flag
03/04/99	control_command_lg	correctly remove unnecessary blanks from command lines
03/12/99	cmo_create	make interpolation type be ‘and’ for isetwd and xtetwd
03/12/99	cmo_interpolate	fix interpolation for isetwd and xtetwd
03/15/99	pset	idebug delared as integer
03/15/99	rmmat	fix error return flag
03/24/99	resetpts	fix error return flag
03/30/99	surfset	fix memory management error
04/02/99	getmpary	set defaults correctly by testing nwds
04/07/99	closed_surfaces	fix arguments to getregv2 call
04/09/99	refine_edge_add	modify pset membership for new nodes.
04/12/99	cmo_select, cmo_get_name	remove null character from end of name
04/29/99	recon2d	set itetoff
05/03/99	lpfilter,LowPassFilterModule	avoid overwriting data

Code Improvements:

11/03/98	smooth	new option **smooth/position/aspect** will smooth to improve aspect ratios.
11/05/98	smooth,extract	new option **smooth/position/lpfilter** will smooth surface networks. New extract option **extract/network** will an interface network from a 3D mesh.
11/23/98	pset	New option **surface** (surface names:**-all-**, **-interface-**, **-boundary-** have the obvious special meanings)
11/23/98	delaunay	Insert nodes in mesh in random order – replace n**2 algorithm to find matching faces with a linked list approach.
12/23/98	recon2d	changed test to use consistent volume calculation.
11/12/98	refine, tangent_plane, cer_chain, refine_edge_list_lg, lpfilter, LowPassFilterModule, GraphModule	new command options
01/06/99	triangulate_lg, msgtty	add **triangulate** command
01/20/99	pntlimc	check for pset named ‘-def-‘ or empty string
01/25/99	addmesh, addmesh_delete, addmesh_pyramid, boundary_components, chkreg, chkregv, closed_surfaces, cmo_delatt_def, cmo_interpolate, cmo_setatt, cmo_release, connect, correctpc, derefine, dopmat, dumpchad, filholes, geniee, get_mregions, get_regions, get_surfaces, getreg, getregv, grid_to_grid, hextotet_att, hmemadjb, hsb2seta, ifacept, initx3d, math, occonv, pstatus, readgmv_binary, refine_coupling_coef, refine_edge_add, refine_face, refine_face_add, rmregion, rmsurf, rwdpmw, rz, search2d, sortbins, taylor_error, translate, volume_tet, voron2d, writedump, refine_edge_list_lg	corrected warning that showed up on the DEC compile
02/02/99	recon2,mega_error	restrict existence of ‘mega’ related attributes to recon loop – change io disposition to not write to GMV files
02/10/99	refine,refine_interface_elements_lg	new refine option – refine non-interface edges of tets all of whose vertices are interface nodes.

03/15/99	dumpfehm, writedump, matbld3d_stor	generate compressed matrix
03/17/99	cel_chain,cer_chain refine_edge_add	set pset membership of child nodes in refine_edge_add_tet pset is inherited from ‘anding’ the pset of the endpoints of refined edgeh

Code Changes:

11/03/98	agd3d massage sgd, primestep	add smoothing operation to optimization loop in massage. smoothing now automatic in massage – turn it off with ‘nosmooth’
11/16/98	cel_chain	remove call to recon from inside refine/rivara loop.
12/21/98	agd3d	allow more merges of nodes that do not have unique successors and predecessors
12/22/98	dumpavs	allow for ranks/=1 and limit coordinate range to (-1.e-30, 1.e+30)
12/23/98	aratio_tet	handle extreme aspect ratio tets correctly
01/14/99	agd3d,aratio_tet, aratio_tri	remove assumption that fp errors would not be trapped
01/15/99	massage	set ipointi to 1 and ipointj to nnodes
01/15/99	intradd	use a more memory efficient algorithm to create child nodes
01/20/99	agd3d	change error to warning when material match in question (skip merge)
01/21/99	all common blocks	moved common statements after declarations added ‘save’ statement
01/25/99	dump_recolor_lg neighbor_recolor_lg writedump	add dump/recolor command (see above)
01/25/99	dumpfehm dump_outside_list	option to keep/delete boundary attributes on fehm files
01/25/99	ung2avs	option to convert Ungenerate files to AVS files
01/29/99	dumpgmv_hybrid	read binary/ascii from command line
02/03/99	flip1to0, flip2to2, flip3to2, flip4to4, flip2to0, flip3to2I flip4to4i flip2to0b mflip recon recon2	remove calls to fluxing routines and clean up associated memory usage
02/23/99	control_command_lg writloga, writinit, dotask, dotaskx3d, initlagrit, msgtty, control_lg.h, lagrit.h	new method of command processing
03/05/99	dumpgmv_hybrid	cmo attribute –def- is modified so that it will not be written to gmv files.
03/05/99	writedump,readdump dump_lagrit, dump_lagrit_geom, read_lagrit read_lagrit_geom	dump/lagrit and read/lagrit now write and read ascii geometry files eventually this command will also dump the mesh objects
03/12/99	cmo_dump_cmo cmo_readdump_cmo	dump/lagrit and read/lagrit now write and read ascii restart files that contain geometry and mesh object information.
03/15/99	matbld2d_stor	add max connections to output – make consistent with matbld3d_stor
03/15/99	eset	don’t print element number of member of set
03/15/99	quality	print if idebug set to 1
04/01/99	connect2d_lg delaunay2d_lg, delaunay2d_connect_lg, multi_material2d_lg, fix_small_triangles_lg, make_big_triangle_lg	new code to connect 2d planar node distributions into 2d grids
04/09/99	scale_lg, msgtty	change subroutine name 'scale' to 'scale_lg' to avoid conflicts with other libraries